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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPELLANT'S MAIN BRIEF ON APPEAL

APPELLANT: Takatomo Nishino ATTY. DOCKET NO. 09792909-5672  
SERIAL NO. 10/664,446 GROUP ART UNIT: 1745  
FILING DATE: September 18, 2003 EXAMINER: Tracy Mae Dove  
TITLE: "ANODE MATERIAL AND BATTERY USING SAME"

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Dear Sir:

In accordance with the provisions of 37 C.F.R. §41.37, Appellant submits this Main Brief on Appeal pursuant to the Notice of Appeal mailed on May 29, 2008 in the above-identified application.

The Commissioner is hereby authorized to charge the amount of \$510.00 for the requisite appeal brief fee to the Appellant's Attorneys' credit card. Form 2038 is attached.

Appellant petitions the Commissioner for Patents to extend the time for filing this brief by two months so that the period for filing this brief is extended to September 29, 2008. A postal money order in the amount of \$460 is attached to cover the extension fee.

The Commissioner is hereby authorized to charge any deficiency in fees associated with this communication or credit any overpayment to Deposit Account No. 19-3140. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

By: Christopher P. Rauch  
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Dear Sir:

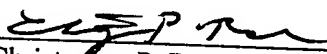
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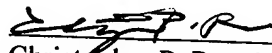
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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on September 12, 2008.

 (Reg. No. 45,034)  
Christopher P. Rauch



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

**APPELLANT'S MAIN BRIEF ON APPEAL**

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Dear Sir:

In accordance with the provisions of 37 C.F.R. §41.37, Appellant submits this Main Brief on Appeal pursuant to the Notice of Appeal mailed on May 29, 2008 in the above-identified application.

**I. REAL PARTY IN INTEREST:**

The real party in interest in the present appeal is the Assignee, Sony Corporation. The assignment was recorded in the U.S. Patent and Trademark Office at Reel 015046, Frame 0728.

**II. RELATED APPEALS AND INTERFERENCES:**

Appellant is not aware of any related appeals or interferences.

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02 FC:1252

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### **III. STATUS OF CLAIMS:**

Claims 1-12 are pending in the application.

The present appeal is directed to claims 1-12, which were finally rejected in an Office Action dated March 31, 2008.

A copy of claims 1-12 is appended hereto as the Claims Appendix.

The status of the claims on appeal is as follows:

Claims 1-12 are pending and under consideration. In the non-final Office Action dated August 22, 2007, the Examiner made the following disposition:

- A.) Asserted that claims 1 and 7 include product-by-process limitations.
- B.) Rejected claims 1-12 under 35 U.S.C. §§102(b)/103(a) in view of *Kawakami, et al.* (U.S. 6,432,585) ("Kawakami").
- C.) Rejected claims 1, 3-7, and 9-12 under 35 U.S.C. §§102(b)/103(a) in view of *Suzuki, et al.* (U.S. 6,413,672) ("Suzuki 672").
- D.) Rejected claims 1, 4, 5, 7, 10, and 11 under 35 U.S.C. §§102(b)/103(a) in view of *Suzuki, et al.* (U.S. 6,171,725) ("Suzuki 725").
- E.) Rejected claims 1-12 under 35 U.S.C. §§102(e)/103(a) in view of *Inoue, et al.* (U.S. 6,506,520) ("Inoue").

### **IV. STATUS OF AMENDMENTS:**

All amendments have been entered in this application.

**V. SUMMARY OF CLAIMED SUBJECT MATTER:**

Claims 1-12 are currently pending. Claims 1 and 7 are the only pending independent claims under consideration. Claims 2-6 and 9-12 depend directly or indirectly from independent claims 1 or 7. Independent claims 1 and 7 are summarized below.

**Claim 1:**

Referring to Figure 2 as an illustrative example, claim 1 claims an anode material 24 comprising a composite material including a base material physically bonded by van der Waals forces to a carbonaceous material (page 6, lines 4-20). The base material includes at least one element selected from the Group 14 elements, except for carbon (C) (page 6, lines 7-9). The physical bonding of the base material to the carbonaceous material is effected by applying a compressive force and a shearing force to at least a part of a surface of a base material when the composite material is formed (page 6, lines 4-20).

**Claim 7:**

Referring to Figure 2 as an illustrative example, claim 7 claims a battery comprising a cathode 22, an anode 24, and an electrolyte 25 (page 10, lines 6-13; page 12, line 10-page 13, line 3). The anode comprises a composite material including a base material physically bonded by van der Waals forces to a carbonaceous material (page 6, lines 4-20). The base material includes at least one element selected from the Group 14 elements, except for carbon (C) (page 6, lines 7-9). The physical bonding of the base material to the carbonaceous material is effected by applying a compressive force and a shearing force to at least a part of a surface of a base material when the composite material is formed (page 6, lines 4-20).

**VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL:**

The following grounds of rejection are to be reviewed on appeal:

- A.) Examiner's assertion that claims 1 and 7 include product-by-process limitation.
- B.) Rejection of claims 1-12 under 35 U.S.C. §§102(b)/103(a) in view of *Kawakami, et al. (U.S. 6,432,585)*("Kawakami").
- C.) Rejection of claims 1, 3-7, and 9-12 under 35 U.S.C. §§102(b)/103(a) in view of *Suzuki, et al. (U.S. 6,413,672)*("Suzuki 672").
- D.) Rejection of claims 1, 4, 5, 7, 10, and 11 under 35 U.S.C. §§102(b)/103(a) in view of *Suzuki, et al. (U.S. 6,171,725)*("Suzuki 725").
- E.) Rejection of claims 1-12 under 35 U.S.C. §§102(e)/103(a) in view of *Inoue, et al. (U.S. 6,506,520)*("Inoue").

## **VII. ARGUMENT:**

As set forth below, claims 1-12 are not anticipated under 35 U.S.C. §102 or rendered obvious under 35 U.S.C. §103 based on the teachings of *Kawakami*, *Suzuki '672*, *Suzuki '725*, or *Inoue*. Appellant respectfully submits the Examiner's assertions are incorrect as a matter of fact and law. Thus, for the reasons set forth below, Appellant respectfully requests that this Board reverse the rejections of claims 1-12.

### **A.) Claims 1 and 7 do not include product-by-process limitations**

Claims 1 and 7 do not recite product-by-process limitations. Claims 1 and 7 each claim subject matter relating to a base material that is physically bonded by van der Waals forces to a carbonaceous material, wherein the physical bonding of the base material to the carbonaceous material is "effected by applying a compressive force and a shearing force to at least a part of a surface of a base material when the composite material is formed."

The Examiner argues that the limitation "effected by applying a compressive force and a shearing force to at least a part of a surface of a base material when the composite material is formed" is a product-by-process limitation and thus gives it no patentable weight. Appellant disagrees. The relevant limitation recites a characteristic of the physical bonding of the base material to the carbonaceous material. This characteristic exists, that is it is effected, because a compressive force and a shearing force has been applied. Thus, the relevant limitation is not a product-by-process limitation and is instead a recitation of a characteristic of the physical bonding.

However, in the event the relevant claim language is construed to include product-by-process limitations, Appellant notes that:

The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially . . . where the manufacturing steps would be expected to impart distinctive structural characteristics to the final product.

MPEP 2113; *In re Garnero*, 412 F.2d 276, 279 (CCPA 1979).

As described in Appellant's specification, Appellant's claimed composite material has distinctive structural characteristics imparted by the application of a compressive force and a shearing force at the time the composite material is formed. Appellant's claimed composite material exhibits improved cycle characteristics due to the application of a compressive force and a shearing force at the time the composite material is formed. Conventional composite



materials do not exhibit this improved cycle characteristic, because conventional composite material components are not bonded together by the application of a compressive force and a shearing force at the time the conventional composite material is formed. *Specification*, page 6, lines 4-20.

B-E.) Claims 1-12 are neither anticipated nor unpatentable in view of *Kawakami*, *Suzuki* '672, *Suzuki* '725, or *Inoue*:

*Kawakami*, *Suzuki* '672, *Suzuki* '725, and *Inoue* each fails to disclose or suggest a composite material that exhibits improved cycle characteristics due to the application of a compressive force and a shearing force to a base material and a carbonaceous material at the time the composite material is formed. Thus, none of these cited references teaches nor suggests claims 1-12.

Appellant's independent claims 1 and 7 each claim subject matter relating to a composite material including a base material physically bonded by van der Waals forces to a carbonaceous material. The physical bonding of the base material to the carbonaceous material is effected by applying a compressive force and a shearing force to at least a part of a surface of a base material when the composite material is formed.

As described above, Appellant respectfully submits that claims 1 and 7 do not include product-by-process limitations. However, in the event the relevant claim language is construed to include product-by-process limitations, Appellant notes that:

The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially . . . where the manufacturing steps would be expected to impart distinctive structural characteristics to the final product.

MPEP 2113; *In re Garnero*, 412 F.2d 276, 279 (CCPA 1979). As described in Appellant's specification, Appellant's claimed composite material has distinctive structural characteristics imparted by the application of a compressive force and a shearing force at the time the composite material is formed. Appellant's claimed composite material exhibits improved cycle characteristics due to the application of a compressive force and a shearing force at the time the composite material is formed. Conventional composite materials do not exhibit this improved cycle characteristic, because conventional composite material components are not bonded together by the application of a compressive force and a shearing force at the time the conventional composite material is formed. *Specification*, page 6, lines 4-20.

The cited references, taken singly or in combination, fail to disclose or suggest a composite material that exhibits improved cycle characteristics due to the application of a compressive force and a shearing force to a base material and a carbonaceous material at the time the composite material is formed. This claimed subject matter is simply not discussed in the cited references. Further, nowhere do the cited references suggest application of a compressive force and a shearing force to effect Appellant's claimed physical bonding. Thus, the composite material of the cited references could not have distinctive structural characteristics effected by the application of a compressive force and a shearing force. The cited references at best disclose composite materials having physical bonds that are effected by milling and/or mixing of ingredient materials. None discloses or fairly suggest particles or a material having physical bonds having characteristics effected by the application of a compressive force and shearing action.

For at least these reasons, the cited references fail to disclose or suggest claims 1 and 7.


Claims 2-6 and 8-12 depend directly or indirectly from claims 1 or 7 and are therefore allowable for at least the same reasons that claims 1 and 7 are allowable.

Appellants respectfully request that the Board reverse the rejection.

**VIII. CONCLUSION:**

For the foregoing reasons, Appellants respectfully submit that the rejections posed by the Examiner are improper as a matter of law and fact. Accordingly, Appellants respectfully request the Board reverse the rejections of claims 1-12.

Respectfully submitted,

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## **CLAIMS APPENDIX**

1. (Previously Presented) An anode material, comprising: a composite material including a base material physically bonded by van der Waals forces to a carbonaceous material, the base material including at least one element selected from the Group 14 elements, except for carbon (C), the physical bonding of the base material to the carbonaceous material effected by applying a compressive force and a shearing force to at least a part of a surface of a base material when the composite material is formed.
2. (Original) An anode material according to claim 1, wherein the base material further includes at least one kind selected from the group consisting of scandium (Sc), titanium (Ti), vanadium (V), chromium (Cr), manganese (Mn), iron (Fe), cobalt (Co), nickel (Ni), copper (Cu), zinc (Zn), boron (B), aluminum (Al), gallium (Ga), indium (In) and silver (Ag).
3. (Original) An anode material according to claim 1, wherein the carbonaceous material is acetylene black.
4. (Original) An anode material according to claim 1, wherein the carbonaceous material is artificial graphite.
5. (Original) An anode material according to claim 1, wherein the carbonaceous material is carbon fiber.
6. (Previously Presented) An anode material according to claim 1, wherein a mass ratio of the base material and the carbonaceous material in the composite material is within a range of 0.1 to 8.0 inclusive for the carbonaceous material to 100 for the base material.
7. (Previously Presented) A battery, comprising: a cathode; an anode; and an electrolyte, wherein the anode comprises a composite material including a base material physically bonded by van der Waals forces to a carbonaceous material, the base material including at least one element selected from the Group 14 elements, except for carbon (C),

the physical bonding of the base material to the carbonaceous material effected by applying a compressive force and a shearing force to at least a part of a surface of a base material when the composite material is formed.

8. (Original) A battery according to claim 7, wherein the base material further includes at least one kind selected from the group consisting of scandium (Sc), titanium (Ti), vanadium (V), chromium (Cr), manganese (Mn), iron (Fe), cobalt (Co), nickel (Ni), copper (Cu), zinc (Zn), boron (B), aluminum (Al), gallium (Ga), indium (In) and silver (Ag).

9. (Original) A battery according to claim 7, wherein the carbonaceous material is acetylene black.

10. (Original) A battery according to claim 7, wherein the carbonaceous material is artificial graphite.

11. (Original) A battery according to claim 7, wherein the carbonaceous material is carbon fiber.

12. (Previously Presented) A battery according to claim 7, wherein a mass ratio of the base material and the carbonaceous material in the composite material is within a range of 0.1 to 8.0 inclusive for the carbonaceous material to 100 for the base material.

### **EVIDENCE APPENDIX**

Appellant does not submit additional evidence with this appeal brief and no additional evidence has been submitted during prosecution.

### **RELATED PROCEEDINGS APPENDIX**

Appellant is not aware of any related appeals or interferences with regard to the present application.